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The Effects of Health Insurance and a Usual Source of Care on a Child's Receipt of Health Care

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Abstract

Introduction—Recent health reforms will expand US children's insurance coverage. Yet, disparities persist in access to pediatric care, even among the insured. We investigated the separate and combined effects of having health insurance and a usual source of care (USC) on children's receipt of health care services.

Methods—We conducted secondary analysis of the nationally-representative 2002-2007 Medical Expenditure Panel Survey data from children (aged 18 years) who had at least one health care visit and needed any additional care, tests, or treatment in the preceding year (n=20,817).

Results—Approximately 88.1% of the study population had both a USC and insurance; 1.1% had neither one; 7.6% had a USC only, and 3.2% had insurance only. Children with both insurance and a USC had the fewest unmet needs. Among insured children, those with no USC had higher rates of unmet needs than those with a USC.

Discussion—Expansions in health insurance are essential; however, it is also important for every child to have a USC. New models of practice could help to concurrently achieve these goals.

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Keywords

child health; health insurance; usual source of care; access to health care; health care disparities; health policy; health care reform

Introduction

With the reauthorization of the Children's Health Insurance Program (CHIP) and the recent passage of the Patient Protection and Affordable Care Act of 2010, energies are now focused on expanding health insurance coverage to millions of Americans. The percentage of children in the United States with insurance coverage has increased over the past decade, and children with stable health insurance coverage have better access to health care services, which contributes to better outcomes (Abdullah et al., 2010; DeVoe, Ray, Krois & Carlson, 2010; Olson, Tang, & Newacheck, 2005; Szilagyi, Schuster & Cheng, 2009). Yet, even among insured children, disparities exist with regard to receipt of indicated health care services (Mangione-Smith et al., 2007). Insurance coverage is often necessary to access care, but not sufficient (DeVoe et al., 2007; Selden & Hudson, 2006), especially if individuals have no place to obtain care (Starfield, 2008). Recent estimates report that nearly 10% of children in the United States are without a usual source of care (USC) (Brown, 2005; Hoilette, Clark, Gebremariam et al., 2009).

A USC is commonly defined as "the particular medical professional, doctor's office, clinic, health center, or other place where a person would usually go if sick or in need of advice about his or her health." The focus on expanding health insurance in the recent federal health care reform legislation begs the question: if we achieve (near) universal insurance coverage for children, will it matter whether each child has a USC? Past investigations have largely focused on only health insurance or a USC (Hayward, Bernard, Freeman, & Corey, 1991; Newacheck, Hughes, & Stoddard, 1996; Selden & Hudson, 2006; Szilagyi, Shone, Klein, Bajorska, & Dick, 2007). Few studies have combined insurance and a USC to assess their separate and combined effect on receipt of health care services and unmet health care needs. In addition, past studies have been limited in scope (Allred, Wooten, & Kong, 2007) or assessed only a small population (DeVoe, Petering, & Krois, 2008). To our knowledge, no study has conducted a direct comparison of national data to determine how both health insurance and a USC, only one or the other, or neither one impact children's access to pediatric health care services and unmet health care needs.

The primary objective of this study was to ascertain the separate and combined effects of having health insurance and/or a USC on a child's parental-reported access to health care services and unmet needs. Secondly, we aimed to make head-to-head comparisons between having insurance coverage alone versus a USC alone to determine if either one was consistently superior to the other in all measures of access to health care services.

Methods

Data

We analyzed data from the Medical Expenditure Panel Survey-Household Component (MEPS-HC) (Agency for Healthcare Research and Quality, 2004). MEPS-HC is a large-scale survey conducted across the United States that collects specific health care service data on Americans from a sample of selected families. It includes items such as demographics, health conditions, services used, frequency of use, access to care, and health insurance coverage (Agency for Healthcare Research and Quality, 2009). The MEPS-HC utilizes a stratified and clustered random sample from National Health Interview Survey households

and then weights responses to enable findings that are nationally-representative of the entire civilian, non-institutionalized US population (Cohen, Monheit, Beauregard et al, 1996). MEPS-HC selects a new panel of respondents each year, and data is collected from each panel five times over a two and a half year period. The MEPS-HC data is then reported in yearly files. Each year of data constitutes a nationally representative sample, and it is possible to pool data from multiple years and then calculate average annual estimates. We combined data from the 2002 through 2007 annual public use data files, because these six years have a common variance structure necessary to ensure compatibility and comparability of our variables within the complex MEPS-HC survey sample design. We first included all individuals in the MEPS-HC with positive full-year weights and known information about USC and full-year insurance status (n=193,119, which excluded 3,984 individuals without insurance and/or USC information). This sample is representative of a population of nearly 288.8 million. Then, we limited the analyses of unmet needs to the MEPS-HC subpopulation of children (aged 18 years of age) who had at least one health care visit and who had a need for any additional care, tests, or treatment in the past 12 months (n=20,817 children). To control for parental factors (e.g. parental employment, education, marital status) in multivariate analyses, we limited the sample further to children who could be linked to at least one biological, adopted, and/or step parent residing in the same household (MEPS does not include variables for linking foster parents or non-parent guardians in this manner) (Agency for Healthcare Research and Quality, 2004). This process excluded an additional 699 children with no linked parent identifier and/or incomplete parental information.

Variables and Analyses

Outcome Variables

We identified 15 MEPS-HC items that pertained to self-reported unmet health care needs among children. Next, using these items we constructed four composite unmet need variables, including: (1) unmet medical, dental, prescription needs, (2) problem to get care, tests, or treatment, (3) delayed urgent care, problem in getting care, or problem in seeing specialist, and (4) any unmet needs. Unmet medical, dental, and prescription needs was defined as whether the person was unable to receive any medical, dental or prescription treatment or was delayed in receiving treatment. Problem getting care, tests, or treatment was defined by whether or not it was a problem to get care, tests, or treatment that a parent or a clinician believed necessary. Delayed care was defined by (a) whether or not they always got care for an illness, injury or condition as soon as wanted if they had an illness, injury or condition that needed care right away, (b) if there was a problem getting the care, tests or treatment that a parent or clinician believed the child needed, and/or (c) whether the family encountered any problems seeing a specialist that the child needed to see. Any unmet need was defined as whether the child had any one or more of the following unmet healthcare needs within the past year: not always getting care as soon as was wanted for an illness, injury, or condition; having a problem in getting the care, tests, or treatment that a parent or clinician believed the child needed; having a problem in getting to see a specialist that the child needed to see; unable to get needed medical, dental, or prescription care; delay in getting needed medical, dental, or prescription care; whether it was a problem to not get needed medical, dental or prescription care.

Independent Variables

We assessed whether an individual child had health insurance coverage and/or a USC at the same point during the year, and then created four subgroups, including: (1) insured and had a USC (Yes INS/Yes USC); (2) insured but no USC (Yes INS/No USC); (3) not insured but had a USC (No INS/Yes USC); and (4) not insured and no USC (No INS/No USC).

We used the conceptual model designed by Aday and Andersen (Aday & Andersen, 1974; Andersen, 1995; Davidson et al., 2004) to guide the identification of nine covariates that might influence access to care, including: age, race, ethnicity, parental employment, geographic residence, parental education, household income as a percent of federal poverty level, family composition, and health status. In two-tailed, chi-square analyses, each covariate was significantly associated with at least one outcome ($p < 0.10$); thus, all covariates were included in logistic regression models with the exception of parental employment status, which was found to have significant collinearity with other parental variables for children's outcomes, and thus was not included in the logistic regression models.

Statistical Analysis

We determined the prevalence of insurance coverage and a USC among the study population. In this process, we confirmed similar patterns of association with unmet needs between cross-sectional and full-year insurance variables; thus, we decided to use cross-sectional insurance in the combined INS/USC variable for consistency (i.e. we did not have a longitudinal measure of full-year USC status). We then used chi-square analyses to ascertain associations between covariates and each of the four INS/USC subgroups. We also used two-tailed chi-square analyses to ascertain associations between the four INS/USC subgroups and, respectively, the covariates and the four outcomes. Finally, we used a series of standard logistic regression models to assess the adjusted associations between the INS/USC subgroups and the four composite unmet need outcomes. Models were first built for the unmet medical, dental, or prescription needs outcome using backward selection. Covariates selected in these models were used for all remaining child outcomes to achieve consistency in our examination, and to facilitate comparisons of results across models. These models systematically used each INS/USC subgroup as a reference group to allow for comparisons between having insurance alone or a USC alone. This approach was unique in that it allowed for head-to-head comparisons between the two middle subgroups (Yes INS/No USC and No INS/Yes USC). We calculated measures of association as risk ratios because when an outcome is common (e.g. prevalence of $>10\%$ in a population), odds ratios do not accurately approximate the risk ratio (Zhang & Yu, 1998). Model fit was assessed by the Hosmer and Lemeshow goodness-of-fit test (Hosmer & Lemeshow, 1989), and was found to be adequate in the majority of the models.

We used SUDAAN Version 10.0.1 for all statistical analyses to account for the complex sampling design of the MEPS; α level was set at 0.05 for all multivariate analyses *a priori*. This study protocol was reviewed by the Oregon Health and Science University Institutional Review Board and deemed exempt because data are publicly available.

Results

Among children with at least one visit and a need for further health care services, 95.8% had a USC, and 91.3% had health insurance. An estimated 88.1% had both a USC and insurance (Yes INS/Yes INS), while 1.1% had neither one (No INS/No USC) (Table 1). A higher percentage of children in this study population had health insurance and/or a USC as compared to the entire US population.

In two-tailed chi-square analyses, all of the demographic characteristics varied among the four insurance and/or USC subgroups ($p < 0.01$) (Table 2). For example, Hispanic children represented only 14.1% of the total child sample but 30.6% of the group with no insurance and no USC. In addition, there are higher percentages of unemployed parents, parents with less than 12 years of education, and households that were poor, near poor, or low income in the no insurance and no USC group (No INS/No USC) than in the other groups. Of the

10.7% of children in the subgroups with either continuous insurance alone or a USC alone (Yes INS/No USC or No INS/Yes USC), a higher percentage were Hispanic, lived in the Southern region of the US, and/or were from lower earning households.

Receipt of Health Care Services Associated with Insurance Status and Usual Source of Care

For children, having continuous health insurance and a USC was associated with the lowest percentage of unmet needs, while having neither one was associated with the highest percentage of unmet needs in each of the four composite unmet need variables (Figure 1).

In multivariate analyses, with few exceptions, those with both insurance and a USC (Yes INS/Yes USC) had significantly better access to health care services in the most recent 12 months when compared to the three other groups without insurance and/or a USC (Table 3). The uninsured without a USC had the worst access in all cases. For example, the No INS/No USC subgroup had over 2.5 times the likelihood of reporting an unmet medical, dental, and/or prescription medication need as compared with the Yes INS/Yes USC subgroup (adjusted relative risk [aRR] 2.58; 95% confidence interval [CI] 1.88-3.54). This group was nearly twice as likely to experience any unmet need (aRR 1.91, 95% CI 1.60-2.27). The two middle subgroups (Yes INS/No USC or No INS/Yes USC) were also consistently more likely to experience unmet needs, as compared to children with both insurance and a USC. In only two cases were these middle subgroups not statistically different from the Yes INS/Yes USC reference group. Children with only a USC (No INS/Yes USC) were not statistically more likely to have delayed urgent care, problems in getting care, tests or treatment, or problems in seeing a specialist (aRR=1.07; 95% CI 0.95-1.21) as compared to the Yes INS/Yes USC group. And, children with only insurance (Yes INS/No USC) were not statistically more likely to have unmet medical, dental or prescription needs (aRR=1.14; 95% CI 0.82-1.57). Those with lower incomes were also significantly more likely to report unmet needs, as compared to the highest income group. Similarly, children with reported health status less than excellent were more likely to experience unmet needs.

Table 4 presents the series of multivariate logistic regression models, which expanded on the original models reported in Table 3. In these analyses, we systematically used each of the other four INS/USC subgroups as the reference group. This unique approach allowed us to compare the two middle groups to each other (Yes INS/No USC versus No INS/Yes USC). As compared to those with only insurance (Yes INS/No USC as the reference group, Column 2), children with only a USC (No INS/Yes USC) had significantly higher rates of self-reported unmet medical, prescription, and dental needs (aRR 1.51; 95% CI 1.06-2.17); but no other differences emerged between these two middle sub-groups. This was also the only significant finding in Column 3 where No INS/Yes USC was the reference. In all models, the subgroups with either insurance or a USC were better off when compared to the subgroup with no insurance and no USC (No INS/No USC as reference group, Column 4).

Discussion

This study addresses the separate and combined effects of insurance and a USC on children's receipt of health care services and unmet needs. Not surprisingly, uninsured children without a USC were at highest risk for not receiving services. Comparing the two groups with either insurance or a USC, children with only health insurance (and no USC) encountered similar barriers to those with only a USC (and no health insurance). Those with only health insurance or only a USC fared better than the uninsured without a USC and worse than children with both insurance and a USC. These findings highlight the need for children to have both health insurance coverage and a USC. Proposals to greatly expand eligibility for the CHIP or to mandate individual health insurance coverage will not achieve

optimal or equitable access to pediatric health care services without a mechanism to ensure adequate provider capacity (Starfield, 2008). As seen in Massachusetts, expansions in health insurance may only magnify a significant shortage of primary care providers (Long & Masi, 2009). Expansions in health insurance mandated by federal insurance reforms will not be enough to ensure that children receive needed services. Policies must also develop mechanisms to guarantee that there is an adequate supply of pediatric health care providers in the future.

Implications for Practice Reforms

Beyond the notion that every American child deserves both health insurance and a USC, this study highlights broader inadequacies of the US health care system. Children who have both financial access (e.g. insurance) and structural access (e.g. a USC) often do not receive care (DeVoe et al., 2007; Mangione-Smith et al., 2007; Starfield, 2008). Our evaluation confirmed this lack of care; for example, 23% of insured children with a USC reported an unmet health care need. In addition to ensuring that all children have health insurance and a USC, it is also important to achieve synergy between these two essential components of the system in order to optimize children's receipt of recommended health care services (Starfield, 2008). The recent effort to reform both the financing and delivery of primary care to children through "health care homes" shows promise to move us further in this direction (Palfrey et al., 2004; Starfield, 2008). A pediatric health care home—a place where children and families can receive coordinated, comprehensive health care (National Association of Pediatric Nurse, 2003)—is terminology used to ensure the focus of care is on children and families, as opposed to the medical establishment or the clinician (Brady & Brady, 2004). In addition to having a place to go for coordinated care, there has also been a focus on the need for both MD and NP primary care providers to be involved in providing health care services to children. Because of differing patient care skills, partnerships between MD's and NP's offer benefits that either one alone do not. For example, the NP's focus on cooperative care can enhance the diagnosis and treatment style of an MD (Mundinger & Mundinger, 2002).

New models of comprehensive and coordinated care may go further towards improving shortcomings than health insurance expansions (Romaine & Bell, 2010). Advocates argue that a health care home will enable children to have uninterrupted access to care, minimizing care disruptions, and also improve receipt of recommended services through patient registries and electronic health record tracking and prompts (Palfrey et al., 2004). Although health care homes hold potential promise, they will require significant effort to fully realize (Stevens, Seid, Pickering, & Tsai, 2010). For example, a team approach to the delivery of comprehensive care will require reform in the dominant payment schemes. If these are not reformed, and Medicaid and CHIP are expanded within the current delivery environment dominated by fee-for-service provider remuneration, disparate access depending on insurance type will persist and disparity gaps may even widen (Valet, Kutny, Hickson, & Cooper, 2004; Wang, Choe, Meara, & Koempel, 2004).

Limitations

First, secondary data analyses are limited to existing data. The MEPS-HC only captures cross-sectional USC status; therefore, we reported on cross-sectional measures for both insurance and a USC. The duration of non-insurance affects the likelihood of having unmet needs; thus, the vulnerabilities of subgroups with large periods of uninsurance would likely be even higher (Cummings, Lavarreda, Rice, & Brown, 2009; DeVoe, Graham, Krois, Smith, & Fairbrother, 2008; Olson et al., 2005). We were also limited to measuring only outcomes available in the MEPS-HC. Second, we did not account for the type of USC provider, which might contribute to subtle differences that could not be measured (Phillips, Dodoo, Green et al., 2009). Third, although the MEPS-HC is representative of the civilian,

non-institutionalized US population, the observational nature of the data and format of our analyses limit causal inferences. Further, as with all studies that rely on self-report, response bias remains a possibility. Finally, we recognize that the availability of insurance coverage and health care services varies widely by region. However, our multivariate analyses did include a geographic region variable, which could be considered a crude proxy for some of these variations.

Conclusions

Incremental steps to expand children's health insurance programs without efforts to bolster the availability of care and the coordination of care will lead to continued problems with children not able to access necessary health care services. This study demonstrates that both expansion of health insurance and a USC for every child are important to receipt of high quality pediatric health care services. It is crucial that we simultaneously strengthen and coordinate financial and structural access to health care services for all children while, at the same time, generate forces to maximize the actual delivery of high quality and effective care.

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Figure 1. Percentage of US Children Reporting Unmet Healthcare Needs, by Insurance and Usual Source of Care Status

Unmet Med/Dental/Prescription Need = Respondent reported that child was unable to get or had a delay in getting needed medical, dental, or prescription care.

Problem to Get Care, Tests, or Treatment = Respondent reported having a problem in getting the care, tests, or treatment that a parent or doctor believed the child needed.

Delayed Urgent Care, Problem in Getting Care, or Problem in Seeing Specialist = Respondent reported that child did not always get care as soon as was wanted for an illness, injury, or condition that needed care right away; that there was a problem in getting the care, tests, or treatment that a parent or doctor believed the child needed; or that there was a problem in seeing a specialist that the child needed to see.

Any Unmet Needs = Respondent reported that child had any one or more of the following unmet healthcare needs within the past year: not always getting care as soon as was wanted for an illness, injury, or condition; having a problem in getting the care, tests, or treatment that a parent or doctor believed the child needed; having a problem in getting to see a specialist that the child needed to see; unable to get needed medical, dental, or prescription care; delay in getting needed medical, dental, or prescription care; whether it was a problem to not get needed medical, dental or prescription care.

Table 1

Average Number and Percentage of the US Children (<18 years of age) with a Need for Care Tests, or Treatment Who Had Health Insurance and/or an Identified Usual Source of Care, Between 2002-2007 (as compared with the entire US Population)

Insurance and/or Usual Source of Care Status	Entire US Population ^a		US Children with a Need for Care, Tests, or Treatment ^b	
	Unweighted <i>n</i>	Weighted <i>n</i> , in millions (Weighted %) ^c	Unweighted <i>n</i>	Weighted <i>n</i> , in millions (Weighted %) ^c
Yes, Had Insurance (cross-sectional) ^d	152,429	238.3 (82.5)	18,915	27.1 (91.3)
No, Did Not Have Insurance (cross-sectional) ^d	40,690	50.6 (17.5)	1,902	2.6 (8.7)
TOTAL	193,119	288.8 (100.0)	20,817	29.7 (100.0)
Yes, Had Usual Source of Care (USC) ^{d,e}	152,102	232.8 (80.6)	19,752	28.4 (95.8)
No, Did Not Have Usual Source of Care (USC) ^{d,e}	41,017	56.0 (19.4)	1,065	1.3 (4.3)
TOTAL	193,119	288.8 (100.0)	20,817	29.7 (100.0)
Yes Insured / Yes Usual Source of Care ^d (Yes INS/Yes USC)	131,829	206.4 (71.5)	18,171	26.1 (88.1)
Yes Insured/ No Usual Source of Care ^d (Yes INS/No USC)	20,600	31.9 (11.0)	744	0.9 (3.2)
Not Insured / Yes Usual Source of Care ^d (No INS/Yes USC)	20,273	26.4 (9.2)	1,581	2.3 (7.6)
Not Insured / No Usual Source of Care ^d (No INS/No USC)	20,417	24.1 (8.4)	321	0.3 (1.1)
TOTAL	193,119	288.8 (100.0)	20,817	29.7 (100.0)

Source: 2002-2007 Medical Expenditure Panel Survey, Household Component (MEPS-HC).

Note: Column percentages may not equal 100% due to rounding (rounded to nearest tenth).

^aTotal in US population from 6-year pooled sample (2002-2007) with known usual source of care and insurance status information = 193,119 (weighted average annual population N= 288.8 million).

^bOnly includes children with at least one healthcare visit, whose parent or doctor believed the child needed any care, tests or treatment.

^cTo derive population estimates, each record was weighted according to person-level weights provided by the Agency for Healthcare Research and Quality (AHRQ).

^dAlthough MEPS-HC respondents are interviewed 5 times over a 2.5 year period, the data used to determine health insurance and a usual source of care was collected at one point in time (cross-sectional).

^eMEP-HC defines USC status as whether or not a person has a particular doctor's office, clinic, health center, or other place that he or she usually goes to if he or she is sick or needs advice about his/her health.

Table 2

Demographic Characteristics of US Child Respondents to MEPS with a Health Care Visit and a Health Care Need in the Past 12 Months, By Health Insurance and Usual Source of Care Status (2002-2007)

Demographic Variables	Yes INS Yes USC ¹ (Weighted %)	Yes INS No USC ² (Weighted %)	No INS Yes USC ³ (Weighted %)	No INS No USC ⁴ (Weighted %)	Total ^a (Weighted %)
Total Sample n ^a (% of total)	18,171 (88.1%)	744 (3.1%)	1,581 (7.6%)	321 (1.1%)	20,817 (100%)
Age ^b					
0-4	30.3	16.6	29.7	21.9	29.8
5-9	26.9	22.2	27.2	18.6	26.7
10-13	20.6	22.7	23.5	24.3	20.9
14-17	22.3	38.5	19.7	35.2	22.7
Race ^b					
White Only	81.9	77.4	84.8	73.0	81.9
Black Only	11.8	14.9	9.1	15.1	11.7
Other/Multiple Races	6.4	7.7	6.2	11.9	6.5
Ethnicity ^b					
Hispanic	13.4	15.4	18.9	30.6	14.1
Not Hispanic	86.6	84.6	81.1	69.5	86.0
Employment/Parental Employment ^b					
Employed	92.2	86.8	91.5	79.4	91.9
Unemployed	7.8	13.2	8.6	20.6	8.1
Education/Parental Education ^b					
12 years or more	91.0	85.3	85.9	75.9	90.3
Less than 12 years	9.0	14.7	14.1	24.1	9.7
Geographic Residence ^b					
Northeast	19.0	6.6	13.5	9.2 ^e	18.1
Midwest	24.2	19.6	21.7	17.0	23.8
South	36.2	48.7	40.2	40.1	37.0
West	20.5	25.1	24.6	33.8	21.1
Household Income as a percent of Federal Poverty Level (FPL) ^b					
Poor	13.9	21.6	16.5	24.0	14.5
Near Poor	4.2	6.6	4.9	7.8	4.4
Low Income	13.0	13.5	18.2	27.0	13.6
Middle Income	33.0	33.5	31.9	29.2	32.9
High Income	35.9	24.8	28.5	12.0 ^c	34.7

Demographic Variables	Yes INS Yes USC ¹ (Weighted %)	Yes INS No USC ² (Weighted %)	No INS Yes USC ³ (Weighted %)	No INS No USC ⁴ (Weighted %)	Total ^a (Weighted %)
Health Status ^b					
Excellent	47.9	47.5	41.6	36.8	47.3
Very Good	30.5	29.3	34.5	30.4	30.7
Good	17.7	20.5	21.1	24.5	18.1
Fair	3.4	2.3 ^c	2.4	6.6 ^c	3.3
Poor	0.6	0.4 ^c	0.5 ^c	1.7 ^c	0.6
Married/Parents Married ^b					
Married	75.4	63.0	68.5	63.9	74.4
Not Married	24.6	37.0	31.5	36.1	25.6

Source: 2002-2007 Medical Expenditure Panel Survey, Household Component (MEPS-HC)

Note: Column percentages may not equal 100% due to rounding (rounded to nearest tenth).

¹ Yes Usual Source of Care/Yes Insurance. (MEPS-HC defines USC status as whether or not a person has a particular doctor's office, clinic, health center, or other place that he or she usually goes to if he or she is sick or needs advice about his/her health.)

² No Usual Source of Care/Yes Insurance.

³ Yes Usual Source of Care/No Insurance.

⁴ No Usual Source of Care/No Insurance.

^a This total only includes children who had a health care visit and whose parent or clinician believed the child needed any care, tests or treatment in the past 12 months.

^b $p < 0.01$ in the χ^2 analysis for overall differences between subcategories of each demographic characteristic.

^c Group estimate is based on fewer than 30 people and may be unreliable for generalization of results.

Table 3

Among US Children with a Health Care Visit and a Health Care Need in the Past Year, Adjusted Risk Ratios Showing Demographic Characteristics Associated With Unmet Needs

Demographic and Other Characteristics	Unmet Medical, Dental, Prescription Needs ^a		Problem to Get Care, Tests, or Treatment ^b		Delayed Urgent Care, Problem in Getting Care, or Problem in Seeing Specialist ^c		Any Unmet Needs ^d	
	Weighted	% aRR (95% CI)	Weighted %	aRR (95% CI)	Weighted %	aRR (95% CI)	Weighted %	aRR (95% CI)
INS/USC								
Yes INS/Yes USC ¹	7.8	1.00	9.2	1.00	19.1	1.00	23.0	1.00
Yes INS/No USC ²	10.7	1.14 (0.82-1.57)	13.9	1.42 (1.08-1.86)	25.9	1.28 (1.07-1.52)	30.8	1.24 (1.06-1.46)
No INS/Yes USC ³	14.4	1.72 (1.44-2.05)	13.4	1.40 (1.17-1.67)	21.5	1.07 (0.95-1.21)	28.4	1.17 (1.05-1.30)
No INS/No USC ⁴	23.6	2.58 (1.88-3.54)	27.2	2.46 (1.85-3.27)	38.4	1.76 (1.44-2.15)	48.7	1.91 (1.60-2.27)
Age								
0-4	6.4	1.00	9.8	1.00	20.1	1.00	22.5	1.00
5-9	9.1	1.38 (1.15-1.66)	10.2	1.01 (0.89-1.15)	19.2	0.93 (0.86-1.02)	24.1	1.04 (0.96-1.13)
10-13	9.4	1.41 (1.18-1.68)	8.8	0.86 (0.74-1.00)	18.9	0.91 (0.83-1.00)	23.4	1.01 (0.92-1.10)
14-17	10.0	1.52 (1.28-1.80)	10.3	0.99 (0.87-1.14)	20.7	0.99 (0.89-1.09)	25.9	1.11 (1.02-1.21)
Race								
White Only	8.7	1.00	9.4	1.00	19.2	1.00	23.6	1.00
Black Only	7.6	0.61 (0.50-0.74)	10.6	0.89 (0.74-1.06)	21.1	0.94 (0.84-1.05)	24.2	0.85 (0.78-0.94)
Other/Multiple Races	8.4	0.85 (0.66-1.10)	13.9	1.34 (1.10-1.63)	24.7	1.19 (1.04-1.37)	27.7	1.09 (0.96-1.24)
Ethnicity								
Not Hispanic	8.6	1.00	9.3	1.00	19.1	1.00	23.2	1.00
Hispanic	8.6	0.76 (0.63-0.91)	13.2	1.07 (0.93-1.23)	24.0	1.05 (0.95-1.17)	28.0	0.99 (0.90-1.10)
Parental Employment ^e								
Employed	8.2	n/a	9.3	n/a	19.1	n/a	23.1	n/a
Unemployed	12.4		15.0		26.2		31.9	
Parental Education								
12 years or more	8.4	1.00	9.4	1.00	19.2	1.00	23.3	1.00
Less than 12 years	10.2	0.86 (0.72-1.04)	13.3	0.89 (0.76-1.04)	23.7	0.89 (0.79-1.00)	28.9	0.90 (0.81-1.01)
Geographic Residence								
Northeast	6.8	1.00	9.0	1.00	18.2	1.00	21.6	1.00
Midwest	8.5	1.19 (0.98-1.45)	8.2	0.88 (0.71-1.08)	18.7	0.99 (0.87-1.13)	23.1	1.03 (0.91-1.17)
South	9.0	1.31 (1.07-1.61)	9.8	1.01 (0.84-1.22)	19.3	1.01 (0.89-1.14)	23.7	1.06 (0.94-1.19)
West	9.5	1.33 (1.07-1.64)	12.4	1.23 (1.01-1.48)	23.1	1.18 (1.03-1.34)	27.1	1.18 (1.04-1.33)
Household Income as a percent of Federal Poverty Level (FPL)								
High Income	5.7	1.00	6.4	1.00	15.2	1.00	18.1	1.00
Middle Income	8.9	1.48 (1.25-1.75)	9.7	1.42 (1.22-1.64)	19.7	1.21 (1.10-1.34)	24.2	1.26 (1.15-1.38)
Low Income	10.9	1.67 (1.36-2.05)	12.4	1.58 (1.33-1.88)	23.8	1.35 (1.19-1.53)	28.5	1.37 (1.22-1.54)
Near Poor	12.7	1.95 (1.45-2.61)	12.0	1.44 (1.16-1.78)	23.6	1.28 (1.09-1.50)	30.0	1.41 (1.20-1.64)
Poor	11.2	1.70 (1.36-2.11)	15.1	1.83 (1.51-2.22)	25.8	1.40 (1.23-1.60)	31.0	1.45 (1.28-1.64)

Demographic and Other Characteristics	Unmet Medical, Dental, Prescription Needs ^a		Problem to Get Care, Tests, or Treatment ^b		Delayed Urgent Care, Problem in Getting Care, or Problem in Seeing Specialist ^c		Any Unmet Needs ^d	
	Weighted	% aRR (95% CI)	Weighted %	aRR (95% CI)	Weighted %	aRR (95% CI)	Weighted %	aRR (95% CI)
Health Status	6.0	1.00	6.7	1.00	14.0	1.00	17.2	1.00
Excellent	9.2	1.42 (1.21-1.65)	9.8	1.37 (1.20-1.57)	21.3	1.49 (1.36-1.62)	25.8	1.45 (1.34-1.56)
Good	12.0	1.75 (1.49-2.05)	14.9	1.96 (1.70-2.25)	27.8	1.87 (1.70-2.05)	33.3	1.79 (1.65-1.94)
Fair	16.6	2.44 (1.93-3.08)	21.9	2.80 (2.31-3.40)	37.6	2.46 (2.13-2.84)	43.4	2.29 (2.02-2.60)
Poor	28.3	3.86 (2.70-5.50)	36.5	4.65 (3.35-6.47)	57.0	3.74 (3.02-4.63)	62.3	3.30 (2.73-3.99)
Parents Married	7.4	1.00	8.7	1.00	18.2	1.00	21.9	1.00
Married	11.9	1.38 (1.17-1.62)	13.0	1.16 (1.02-1.33)	24.1	1.12 (1.03-1.22)	29.5	1.15 (1.06-1.25)
Not Married								

Source: 2002-2007 Medical Expenditure Panel Survey (MEPS), Household Component

aRR: adjusted risk ratio, CI: confidence interval

^a Respondent reported that child was unable to get or had a delay in getting needed medical, dental, or prescription care.

^b Respondent reported having a problem in getting the care, tests, or treatment that a parent or doctor believed the child needed.

^c Respondent reported that child did not always get care as soon as was wanted for an illness, injury, or condition that needed care right away; that there was a problem in getting the care, tests, or treatment that a parent or doctor believed the child needed; or that there was a problem in seeing a specialist that the child needed to see.

^d Respondent reported that child had any one or more of the following unmet healthcare needs within the past year: not always getting care as soon as was wanted for an illness, injury, or condition; having a problem in getting the care, tests, or treatment that a parent or doctor believed the child needed; having a problem in getting to see a specialist that the child needed to see; unable to get needed medical, dental, or prescription care; delay in getting needed medical, dental, or prescription care; whether it was a problem to not get needed medical, dental or prescription care.

^e Parental employment was not selected into the multivariate models due to high collinearity with other covariates.

¹ Yes Usual Source of Care/Yes Insurance.

² No Usual Source of Care/Yes Insurance.

³ Yes Usual Source of Care/No Insurance.

⁴ No Usual Source of Care/No Insurance.

Table 4

Among US Children with a Health Care Visit and a Health Care Need in the Past Year: the Likelihood of Having Unmet Healthcare Needs, Comparing Health Insurance/Usual Source of Care Subgroups

	Column 1: Multivariate model using <u>Yes INS/ Yes USC¹</u> as the reference group aRR (95% CI)	Column 2: Multivariate model using <u>Yes INS/ No USC²</u> as the reference group aRR* (95% CI)	Column 3: Multivariate model using <u>No INS/ Yes USC³</u> as the reference group aRR* (95% CI)	Column 4: Multivariate model using <u>No INS/ No USC⁴</u> as the reference group aRR* (95% CI)
Unmet Medical, Dental, Prescription Needs ^a				
Child Health INS/USC				
Yes INS/Yes USC ¹	1.00	0.88 (0.64-1.22)	0.58 (0.49-0.70)	0.39 (0.28-0.53)
Yes INS/No USC ²	1.14 (0.82-1.57)	1.00	0.66 (0.46-0.95)	0.44 (0.29-0.66)
No INS/Yes USC ³	1.72 (1.44-2.05)	1.51 (1.06-2.17)	1.00	0.67 (0.47-0.95)
No INS/No USC ⁴	2.58 (1.88-3.54)	2.27 (1.52-3.39)	1.50 (1.05-2.15)	1.00
Problem to Get Care, Tests, or Treatment ^b				
Child Health INS/USC				
Yes INS/Yes USC ¹	1.00	0.70 (0.54-0.93)	0.72 (0.60-0.85)	0.41 (0.31-0.54)
Yes INS/No USC ²	1.42 (1.08-1.86)	1.00	1.01 (0.75-1.37)	0.58 (0.39-0.85)
No INS/Yes USC ³	1.40 (1.17-1.67)	0.99 (0.73-1.33)	1.00	0.57 (0.42-0.77)
No INS/No USC ⁴	2.46 (1.85-3.27)	1.73 (1.18-2.54)	1.76 (1.30-2.39)	1.00
Delayed Urgent Care, Problem in Getting Care, or				
Problem in Seeing Specialist ^c				
Child Health INS/USC				
Yes INS/Yes USC ¹	1.00	0.78 (0.66-0.93)	0.93 (0.83-1.05)	0.57 (0.47-0.69)
Yes INS/No USC ²	1.28 (1.07-1.52)	1.00	1.19 (0.98-1.45)	0.73 (0.56-0.95)
No INS/Yes USC ³	1.07 (0.95-1.21)	0.84 (0.69-1.02)	1.00	0.61 (0.48-0.77)
No INS/No USC ⁴	1.76 (1.44-2.15)	1.38 (1.05-1.80)	1.64 (1.30-2.06)	1.00
Any Unmet Needs ^d				
Child Health INS/USC				
Yes INS/Yes USC ¹	1.00	0.81 (0.69-0.95)	0.85 (0.77-0.95)	0.52 (0.44-0.62)
Yes INS/No USC ²	1.24 (1.06-1.46)	1.00	1.06 (0.88-1.27)	0.65 (0.51-0.83)
No INS/Yes USC ³	1.17 (1.05-1.30)	0.95 (0.79-1.13)	1.00	0.62 (0.50-0.76)
No INS/No USC ⁴	1.91 (1.60-2.27)	1.54 (1.21-1.95)	1.63 (1.32-2.00)	1.00

Source: 2002-2007 Medical Expenditure Panel Survey (MEPS), Household Component

Bold: statistically significant at the p<0.05.

aRR: adjusted risk ratio, CI: confidence interval

* adjusting for child's age, race, ethnicity, parental employment, geographic residence, parental education, household income as a percent of federal poverty level, family composition, and health status

^a Respondent reported that child was unable to get or had a delay in getting needed medical, dental, or prescription care.

^b Respondent reported having a problem in getting the care, tests, or treatment that a parent or doctor believed the child needed.

^c Respondent reported that child did not always get care as soon as was wanted for an illness, injury, or condition that needed care right away; that there was a problem in getting the care, tests, or treatment that a parent or doctor believed the child needed; or that there was a problem in seeing a specialist that the child needed to see.

^d Respondent reported that child had any one or more of the following unmet healthcare needs within the past year: not always getting care as soon as was wanted for an illness, injury, or condition; having a problem in getting the care, tests, or treatment that a parent or doctor believed the child needed; having a problem in getting to see a specialist that the child needed to see; unable to get needed medical, dental, or prescription care; delay in getting needed medical, dental, or prescription care; whether it was a problem to not get needed medical, dental or prescription care.

¹ Yes Insurance /Yes Usual Source of Care.

² Yes Insurance /No Usual Source of Care.

³ No Insurance /Yes Usual Source of Care.

⁴ No Insurance /No Usual Source of Care.